750510 REFERENCE

7BP.

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION **DIVISION OF HIGHWAYS** GEOTECHNICAL ENGINEERING UNIT

CONTENTS

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CORE PHOTOGRAPHS

STRUCTURE SUBSURFACE INVESTIGATION

COUNTY RANDOLPH	
	CULVERT ON SR 3120 (CEDAR
	CEDAR FORK CREEK
SITE DESCRIPTION <u>CU</u>	LVERT NO. 1179

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	SF-750510	1	11

CAUTION NOTICE

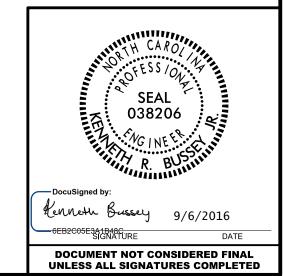
THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N. C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT 1991 707-680. THE SUBSURFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA ARE NOT PART OF THE CONTRACT.

CENERAL SOIL AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARIES ARE BASED ON A GEOTECHNICAL INTERPRETATION OF ALL AVAILABLE SUBSURFACE DATA AND MAY NOT NECESSARILY REFLECT THE ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS OR BETWEEN SAMPLED STRATA WITHIN THE BOREHOLE. THE LABORATORY SAMPLE DATA AND THE IN SITU (IN-PLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOIL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS INCLUDING TEMPERATURES, PRECIPITATION AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT DOES NOT WARRAYT OR CUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR OPINION OF THE DEPARTMENT AS TO THE TYPE TO MATERIALS AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE DEEMS NECESSARY TO SATISTY HIMSELF AS TO CONDITIONS TO BE ENCOUNTERED ON THE PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OR FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONDITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

- TIES:
 THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N.C. DEPARTMENT
 OF TRANSPORTATION AS ACCURATE NOR IS IT CONSIDERED PART OF THE PLANS, SPECIFICATIONS
 OR CONTRACT FOR THE PROJECT.
 BY HAVING REQUESTED THIS INFORMATION, THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS
 FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE
 CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

	PERSONNEL
	Stephen Abernathy
	Mike Morgan
	-
INVES:	TIGATED BY D. Michael Gragg
DRAWN	N BY _Tamara Stivers
CHECK	ED BY Kenneth Bussey
	TTED BY HDR ICA
20RWI	
DATE	September 2016



PROJECT REFERENCE NO. SHEET NO.

SF-750510

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NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

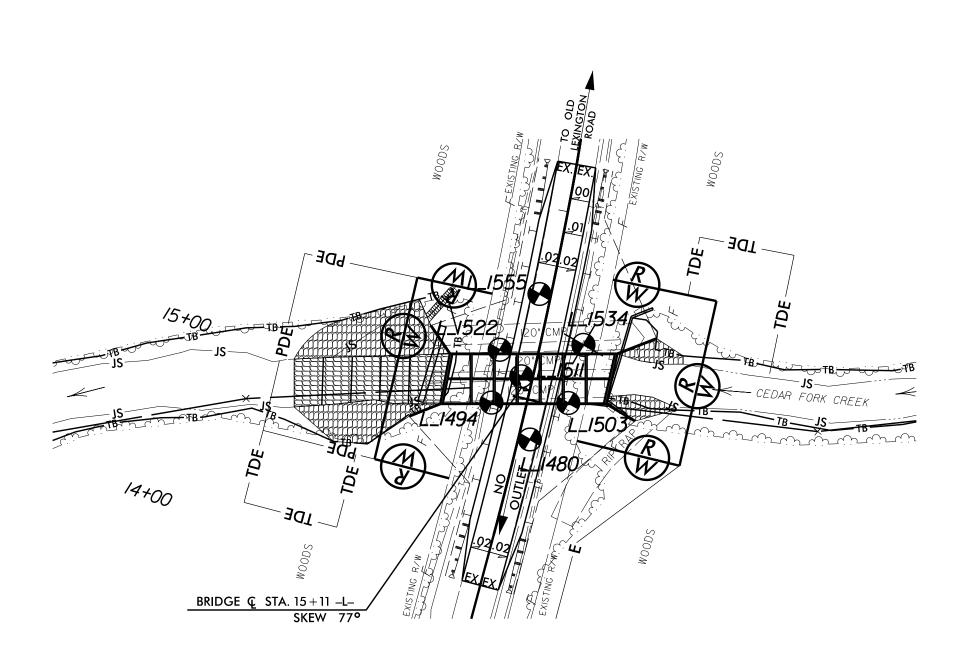
SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

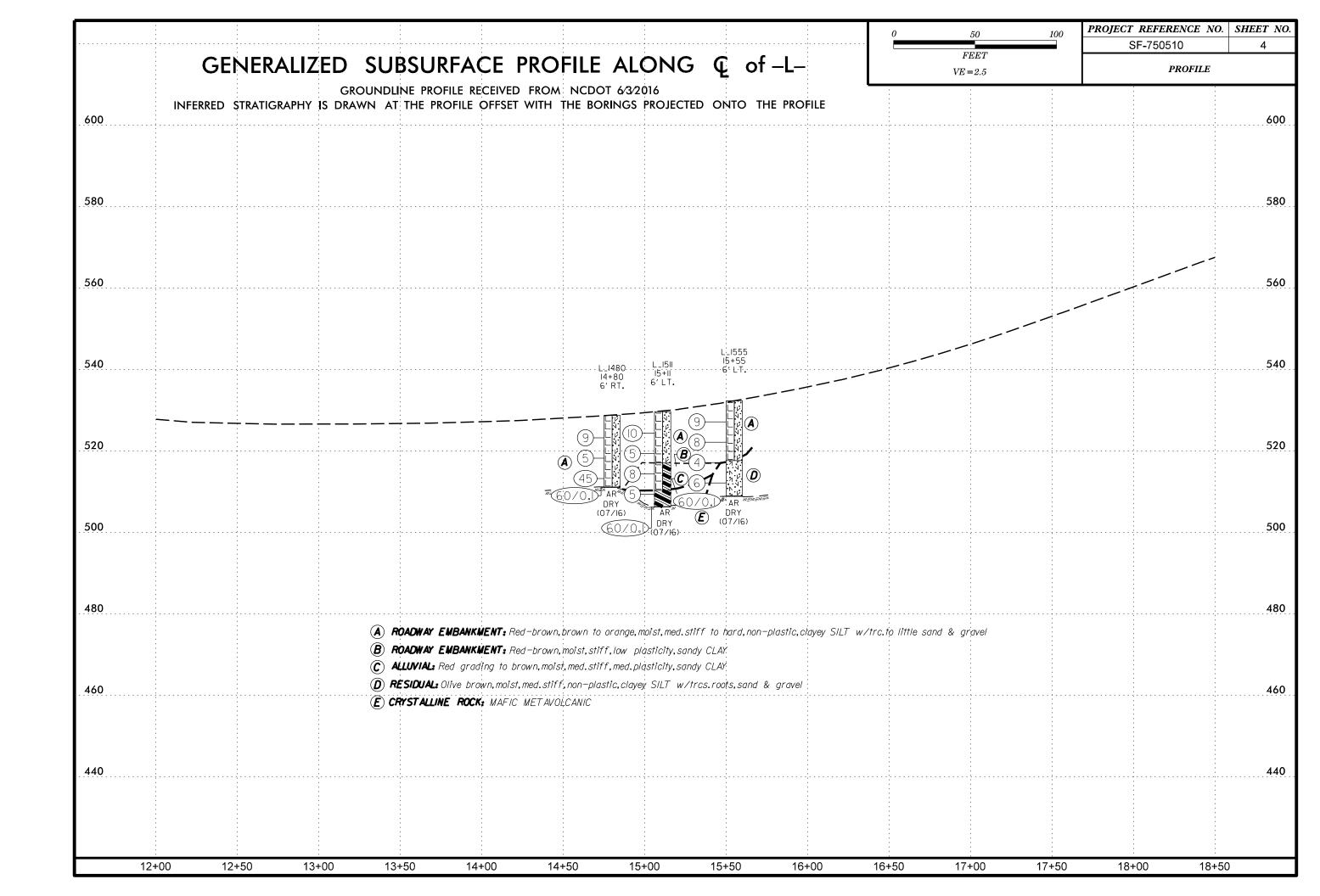
SOIL DESCRIPTION	GRADATION	ROCK DESCRIPTION	TERMS AND DEFINITIONS					
SOIL IS CONSIDERED UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER AND YIELD LESS THAN 100 BLOWS PER FOOT	WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE. UNIFORMLY GRADED - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE.	HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT REFUSAL IF TESTED. AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL.	ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.					
ACCORDING TO THE STANDARD PENETRATION TEST (AASHTO T 206, ASTM D1586). SOIL CLASSIFICATION	GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLE SIZES OF TWO OR MORE SIZES.	SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS IN NON-COASTAL PLAIN MATERIAL, THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN	<u>AQUIFER</u> - A WATER BEARING FORMATION OR STRATA.					
IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH	ANGULARITY OF GRAINS	REPRESENTED BY A ZONE OF WEATHERED ROCK.	ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.					
AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. FOR EXAMPLE, VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6	THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS:	ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:	ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, SUCH AS SHALE, SLATE, ETC.					
SOIL LEGEND AND AASHTO CLASSIFICATION	ANGULAR, <u>SUBANGULAR</u> , <u>SUBROUNDED</u> , OR <u>ROUNDED</u> .	WEATHERED WITH NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > ROCK (WR) 100 BLOWS PER FOOT IF TESTED.	ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT					
CENERAL CRAMIII AR MATERIALS SILT-CLAY MATERIALS	MINERALOGICAL COMPOSITION	FINE TO COARSE CRAIN ICNEOUS AND METAMORPHIC ROCK THAT	WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND					
CLASS. (≤ 35% PASSING *200) (> 35% PASSING *200) ORGANIC MATERIALS	MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC.	CRYSTALLINE ROCK (CR) WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, ONEISS, GABBRO, SCHIST, ETC.	SURFACE.					
GROUP A-1 A-3 A-2 A-4 A-5 A-6 A-7 A-1, A-2 A-4, A-5	ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE. COMPRESSIBILITY	NON-CRYSTALLINE FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN	CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.					
CLASS. A-1-0 A-1-6 A-2-4 A-2-5 A-2-6 A-2-7 A-7-5 A-3 A-6, A-7	SLIGHTLY COMPRESSIBLE LL < 31	ROCK (NCR) SEDIMENTARY ROCK THAT WOULD YEILD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.	COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.					
SYMBOL 000000000000000000000000000000000000	MODERATELY COMPRESSIBLE LL = 31 - 50	COASTAL PLAIN COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD	CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED					
7. PASSING SILT- MUCK.		(CP) SHELL BEDS, ETC.						
"40 30 MX 50 MX 51 MN SOILS SOILS SOILS PEAT		WEATHERING						
"200 I XM CS	ORGANIC MATERIAL SOILS SOILS OTHER MATERIAL	FRESH ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING, ROCK RINGS UNDER						
MATERIAL PASSING *40	LITTLE ORGANIC MATTER 3 - 5% 5 - 12% LITTLE 10 - 20%		HORIZONTAL.					
LL - 40 MX 41 MN 40 MX 41 MN 40 MX 41 MN 40 MX 41 MN 5ULLS WITH	MODERATELY ORGANIC 5 - 10% 12 - 20% SOME 20 - 35%	(V SLI.) CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS IF	DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE					
PI 6 MX NP IU MX IU MX II MN II MN IU MX II MN II MN MODERATE ORGANIC		OF A CRYSTALLINE NATURE.						
GROUP INJEX 8 8 MX 12 MX 16 MX NU MX AMUUNIS UF SOILS			SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.					
USUAL TYPES STUNE FRAUS. FINE SILTY OR CLAYEY SILTY CLAYEY MATTER		CRYSTALS ARE DULL AND DISCOLORED, CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.	FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.					
MATERIALS SAND SAND GRAVEL AND SAND SOILS SOILS		MODERATE SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN	FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM					
GEN. RATING EXCELLENT TO GOOD FAIR TO POOR POOR UNSUITABL	<u> </u>							
AS SUBUKADE PUUK	SPRING OR SEEP	WITH FRESH ROCK.						
PI OF A-7-5 SUBGROUP IS ≤ LL - 30 ; PI OF A-7-6 SUBGROUP IS > LL - 30 CONSISTENCY OR DENSENESS		MODERATELY ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL	FIELD.					
DANCE OF CTANDARD DANCE OF UNCONFINED	MISCELERINEOUS STINDOES	(MOD.SEV.) AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK, ROCK GIVES "CLUNK" SOUND WHEN STRUCK.	JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.					
PRIMARY SOIL TYPE COMPACTATES OF PENETRATION RESISTENCE COMPRESSIVE STRENGTH	ROADWAY EMBANKMENT (RE) 25/025 DIP & DIP DIRECTION		LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO					
(N-VALUE) (TONS/FT2)								
GRANII AR LOOSE 4 TO 10	SOIL SYMBOL STATEST BORING INSTALLATION	TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN.						
MATERIAL MEDIUM DENSE 10 10 30 N/A	ARTIFICIAL FILL (AF) OTHER AUGER BORING CONE PENETROMETER		USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.					
(NON-COHESIVE) VERY DENSE > 50	THAN HOADWAY EMBANKMENT T	SEVERE BUT MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK	PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE					
VERY SOFT < 2 < 0.25	— INFERRED SOIL BOUNDARY — CORE BORING ■ SOUNDING ROD							
	INFERRED ROCK LINE MONITORING WELL TEST BORING							
MATERIAL STIFF 8 TO 15 1 TO 2	A PIEZOMETER	SCATTERED CONCENTRATIONS. QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS	ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF					
(COHESIVE) VERY STIFF 15 TO 30 2 TO 4 HARD > 30 > 4	INSTALLATION SPI N-VALUE		RUN AND EXPRESSED AS A PERCENTAGE.					
TEXTURE OR GRAIN SIZE	RECOMMENDATION SYMBOLS		SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT					
U.S. STD. SIEVE SIZE 4 10 40 60 200 270	UNCLASSIFIED EXCAVATION - TO UNCLASSIFIED EXCAVATION -	SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.						
OPENING (MM) 4.76 2.00 0.42 0.25 0.075 0.053	LICED IN THE TOP 2 FEET OF	HARD CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED	RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO					
BOULDER COBBLE GRAVEL SAND SAND SILT CLAY	UNDERCUT OR BACKFILL SHALLOW UNDERCUT ACCEPTABLE DEGRADABLE ROCK EMBANKMENT OR BACKFILL	TO DETACH HAND SPECIMEN.						
(BLDR.) (COB.) (GR.) (GSE. SD.) (F SD.) (SL.) (CL.)	ABBREVIATIONS		OR SLIP PLANE.					
GRAIN MM 305 75 2.0 0.25 0.05 0.005	AR - AUGER REFUSAL MED MEDIUM VST - VANE SHEAR TEST	BY MODERATE BLOWS.	STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR BPF) OF					
SIZE IN. 12 3		MEDIUM CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT.						
SOIL MOISTURE - CORRELATION OF TERMS	1.							
SOIL MOISTURE SCALE FIELD MOISTURE (ATTERBERG LIMITS) DESCRIPTION GUIDE FOR FIELD MOISTURE DESCRIPTION								
(HITERBERG EIMITS) DESCRIPTION								
- SATURATED - USUALLY LIQUID; VERY WET, USUALLY (SAT.) FROM BELOW THE GROUND WATER TABLE		VERY CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES 1 INCH	LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY					
LL LIQUID LIMIT								
PLASTIC SEMISOLID; REQUIRES DRYING TO								
(PI) PL PLASTIC LIMIT ATTAIN OPTIMUM MOISTURE								
	EQUIPMENT USED ON SUBJECT PROJECT	VERY WIDE MORE THAN 10 FEET VERY THICKLY BEDDED 4 FEET						
OM OPTIMUM MOISTURE SL SHRINKAGE LIMIT	DRILL UNITS: ADVANCING TOOLS: HAMMER TYPE:	WIDE 3 TO 10 FEET THICKLY BEDDED 1.5 - 4 FEET MODERATELY CLOSE 1 TO 3 FEET THINLY BEDDED 0.16 - 1.5 FEET						
PENLIPES ADDITIONAL WATER TO	X CME-45C CLAY BITS X AUTOMATIC MANUAL	CLOSE 0.16 TO 1 FOOT VERY THINLY BEDDED 0.03 - 0.16 FEET VERY CLOSE LESS THAN 0.16 FEET THICKLY LAMINATED 0.008 - 0.03 FEET	NOTES:					
- DRY - (D) ATTAIN OPTIMUM MOISTURE	6' CONTINUOUS FLIGHT AUGER CORE SIZE:	VERY CLOSE LESS THAN 0.16 FEET THICKLY LAMINATED 0.008 - 0.03 FEET THINLY LAMINATED < 0.008 FEET	BORING ELEVATIONS OBTAINED BY SURVEY CONDUCTED 8-30-2016					
PLASTICITY	CORE SIZE: X 8* HOLLOW AUGERS	INDURATION						
PLASTICITY INDEX (PI) DRY STRENGTH	☐ CME-550 ☐ HARD FACED FINGER BITS ☐ X -N Q-2	FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.						
NON PLASTIC 0-5 VERY LOW	TUNGCARBIDE INSERTS	RUBBING WITH FINGER FREES NUMEROUS GRAINS;						
SLIGHTLY PLASTIC 6-15 SLIGHT MODERATELY PLASTIC 16-25 MEDIUM	VANE SHEAR TEST CASING W/ ADVANCER HAND TOOLS:	GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.						
HIGHLY PLASTIC 26 OR MORE HIGH	POST HOLE DIGGER	MODERATELY INDURATED GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.						
COLOR	TRICOUS TRIVO CARD HIND HUDER	CRAING ARE DIFFICULT TO SEPARATE WITH STEEL PROPE.						
DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN. RED. YELLOW-BROWN, BLUE-GRAY).	SOUNDING ROD X CORE BIT VANE SHEAR TEST	INDURATED DIFFICULT TO BREAK WITH HAMMER.						
	VANE SHEAR TEST	CHARD HANNED DI QUE DECITOED TO DECAY CAMPLE						
MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.		EXTREMELY INDURATED SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.	DATE: 8-15-1-					

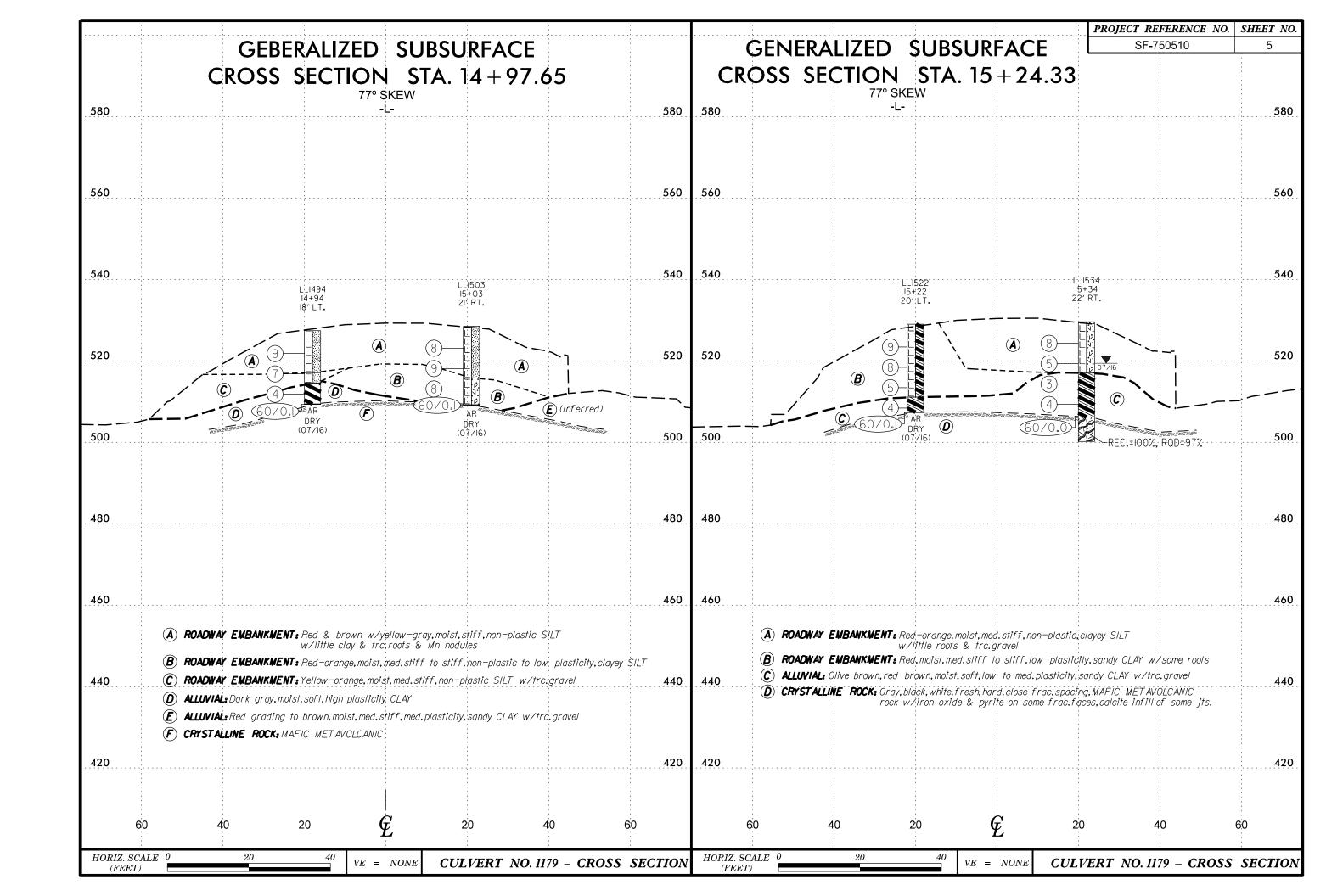


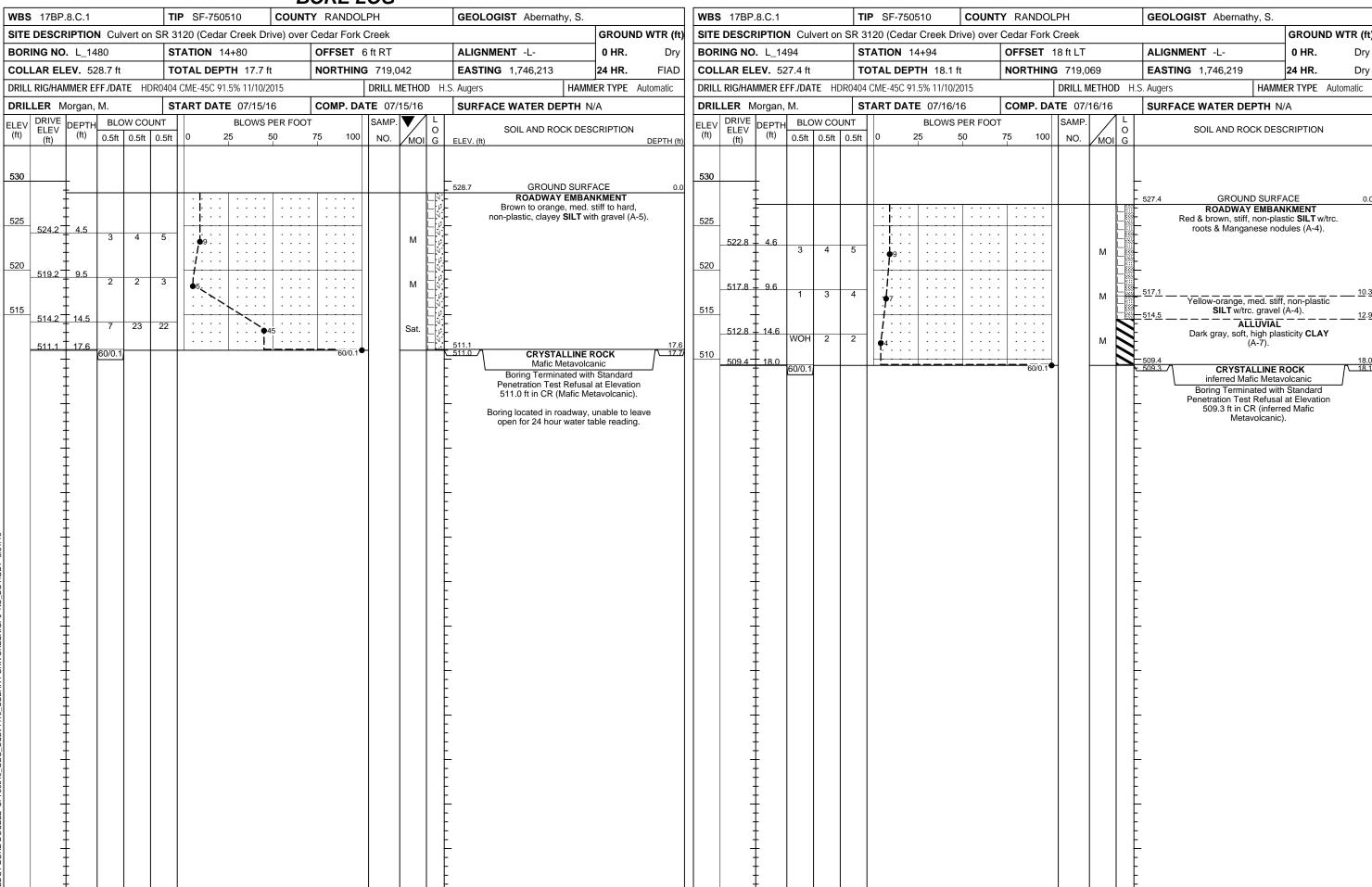


FEET









BORE LOG				
	GEOLOGIST Abernathy, S.	WBS 17BP.8.C.1 TIP	SF-750510 COUNTY RANDOLPH	GEOLOGIST Abernathy, S.
SITE DESCRIPTION Culvert on SR 3120 (Cedar Creek Drive) over Cedar Fork Creek	GROUND WTR (ft)		O (Cedar Creek Drive) over Cedar Fork Creek	GROUND WTR (ft)
	ALIGNMENT -L- 0 HR. Dry		FION 15+11 OFFSET 6 ft LT	ALIGNMENT -L- 0 HR. Dry
	EASTING 1,746,239 24 HR. Dry		AL DEPTH 23.4 ft NORTHING 719,062	EASTING 1,746,239 24 HR. FIAD
DRILL RIG/HAMMER EFF./DATE HDR0404 CME-45C 91.5% 11/10/2015 DRILL METHOD H.S.	-	DRILL RIG/HAMMER EFF./DATE HDR0404 CMI		
	SURFACE WATER DEPTH N/A	_	RT DATE 07/15/16 COMP. DATE 07/15/16	SURFACE WATER DEPTH N/A
ELEV (ft) DEPTH BLOW COUNT BLOWS PER FOOT SAMP. Count Coun	SOIL AND ROCK DESCRIPTION ELEV. (ft) DEPTH (ft)	Column C	BLOWS PER FOOT SAMP. 25 50 75 100 NO. MOI	O SOIL AND ROCK DESCRIPTION G
530	528.5 GROUND SURFACE 0.0 ROADWAY EMBANKMENT	530		529.6 GROUND SURFACE 0.0 N
525 524.1 4.4 3 3 5 1	Red w/yellow-gray, stiff, non-plastic, SILT w/little clay, roots & Manganese nodules (A-4).	525 525.3 4.3 3 5 5	. •10	以 clayey SILT w/little sand & gravel (A-5).
520 519.1 9.4		520 520.3 7 9.3 2 2 3	.,/	-
515 514.1 14.4	515.8 12.7 Red-orange, stiff, non-plastic to low plasticity, clayey SILT (A-5).	515 515.3 14.3 3 5 3		Red grading to brown, med. stiff, med. plasticity, sandy CLAY w/trc. gravel (A-6).
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	509.2 CRYSTALLINE ROCK 19.4	510 510.3 19.3 WOH 2 3	.1	510.3 19.5
60/0.1	CRYSTALLINE ROCK Mafic Metavolcanic			Red grading to brown, med. stiff, med.
	Boring Terminated with Standard Penetration Test Refusal at Elevation 509.1 ft in CR (Mafic Metavolcanic).	506.3 7 23.3 60/0.1	60/0.1	506.3 CRYSTALLINE ROCK Mafic Metavolcanic Boring Terminated with Standard Penetration Test Refusal at Elevation 506.2 ft in CR (Mafic Metavolcanic).
				Boring located in roadway, unable to leave open for 24 hour water table reading.
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	BORE LOG					
WBS 17BP.8.C.1 TIP SF-750510 COU	NTY RANDOLPH	GEOLOGIST Abernathy, S.	WBS 17BP.8.C.1	TIP SF-750510 COUI	NTY RANDOLPH	GEOLOGIST Abernathy, S.
SITE DESCRIPTION Culvert on SR 3120 (Cedar Creek Drive) ov		GROUND WTR (ft)	SITE DESCRIPTION Culvert on S	SR 3120 (Cedar Creek Drive) ov	ver Cedar Fork Creek	GROUND WTR (ft
BORING NO. L_1522 STATION 15+22	OFFSET 20 ft LT	ALIGNMENT -L- 0 HR. Dry	BORING NO. L_1534	STATION 15+34	OFFSET 22 ft RT	ALIGNMENT -L- 0 HR. Dry
COLLAR ELEV. 529.0 ft TOTAL DEPTH 21.7 ft	NORTHING 719,079	EASTING 1,746,245 24 HR. Dry	COLLAR ELEV. 529.6 ft	TOTAL DEPTH 29.4 ft	NORTHING 719,042	EASTING 1,746,269 24 HR. 10.2
DRILL RIG/HAMMER EFF./DATE HDR0404 CME-45C 91.5% 11/10/2015	DRILL METHOD H.	S. Augers HAMMER TYPE Automatic	DRILL RIG/HAMMER EFF./DATE HDR	R0404 CME-45C 91.5% 11/10/2015	DRILL METHOD	SPT Core Boring HAMMER TYPE Automatic
DRILLER Morgan, M. START DATE 07/14/16	COMP. DATE 07/14/16	SURFACE WATER DEPTH N/A	DRILLER Morgan, M.	START DATE 07/14/16	COMP. DATE 07/15/16	SURFACE WATER DEPTH N/A
ELEV (ft) DRIVE ELEV (ft) DEPTH (ft) BLOW COUNT (ft) BLOWS PER FOUND 0 25 50	75 100 NO. MOI G	SOIL AND ROCK DESCRIPTION ELEV. (ft) DEPTH (ft)	ELEV (ft) DEPTH BLOW COUR		75 100 NO. MOI	
525 524.4 4.6 3 4 5 520 519.4 9.6 2 3 5 511.4 14.6 1 2 3 510 509.4 19.6 2 1 3 507.4 21.6 60/0.1	M	Section Sectio	530 525 525.3 4.3 3 3 520 520.3 9.3 2 2 515 515.3 14.3 1 1 510 510.3 19.3 WOH 2	5 . • 8	M M M M M M M M M M M M M M M M M M M	529.6 GROUND SURFACE 0.0 ROADWAY EMBANKMENT Red-orange, med. stiff, non-plastic, clayey SiLT w/trc. gravel & little roots (A-5). ALLUVIAL Red-brown, soft, low to med. plasticity, sandy CLAY (A-6). 506.2 CRYSTALLINE ROCK Mafic Metavolcanic CR (Mafic Metavolcanic). Boring Terminated at Elevation 500.2 ft in CR (Mafic Metavolcanic).

		ORE LOG		
WBS 17BP.8.C.1	TIP SF-750510 COUNT	Y RANDOLPH	GEOLOGIST Abernathy, S.	
SITE DESCRIPTION Culvert on SF	R 3120 (Cedar Creek Drive) over	Cedar Fork Creek		GROUND WTR (ft)
BORING NO. L_1534	STATION 15+34	OFFSET 22 ft RT	ALIGNMENT -L-	0 HR. Dry
COLLAR ELEV. 529.6 ft	TOTAL DEPTH 29.4 ft	NORTHING 719,042	EASTING 1,746,269	24 HR. 10.2
DRILL RIG/HAMMER EFF./DATE HDR04	0404 CME-45C 91.5% 11/10/2015	DRILL METHOD SPT	Γ Core Boring HAMM	ER TYPE Automatic
DRILLER Morgan, M.	START DATE 07/14/16	COMP. DATE 07/15/16	SURFACE WATER DEPTH N	/A
CORE SIZE NQ-2	TOTAL RUN 6.0 ft		I	
ELEV RUN DEPTH RUN DRILL	RUN SAMP. STRATA REC. RQD	L	TOODIDTION AND DEMARKS	
(ft) ELEV (ft) (ft) RATE (Min/ft)	RUN REC. RQD (ft) (ft) % % % % % % % % % % % % % %	O DE	ESCRIPTION AND REMARKS	DEPTH (ft)
506.2 23.4 2.0 N=60/0.0 2:42 25.4 4.0 2:24 2:10		oxide & pyrite 4 5°-15° jts. w/iron o stain &	Begin Coring @ 23.4 ft CRYSTALLINE ROCK fresh, hard, close fracs., Mafic Metavo on some frac. faces, calcite infill of s oxide stain & trcs. pyrite; 4 20°-40° jt. at Elevation 500.2 ft in CR (Mafic Metavo on some frac. faces, calcite infill of s trcs. pyrite; 1 40° jt. partially healed. at Elevation 500.2 ft in CR (Mafic Metavo on some frac. faces, calcite infill of s trcs. pyrite; 1 40° jt. partially healed.	ome jts. s. w/iron oxide · 29.4

SHEET 9

CORE PHOTOGRAPHIC RECORD

SR 3120 Culvert Over Cedar Fork Creek

L_1534 STA. 15+34 22' RT. Box 1 of 1: 23.4-29.4 FEET



WRS												<u>.0G</u>				
***	17BP.	8.C.1			TII	P SF-75	50510)	COUN	TY R	ANDOL	_PH			GEOLOGIST Abernathy, S.	
SITE D	ESCR	IPTION	l Culv	ert or	SR 3	120 (Ced	dar Cr	eek Dr	ive) ove	r Ceda	r Fork	Creek				GROUND WTR (ft)
BORIN	IG NO	. L_15	55		SI	TATION	15+5	55		OFF	SET	6 ft LT			ALIGNMENT -L-	0 HR. Dry
COLLA	AR ELI	EV. 53	2.3 ft		тс	OTAL DE	PTH	23.5 f	t	NOI	RTHING	3 719,	075		EASTING 1,746,281	24 HR. FIAD
DRILL R	RIG/HAN	MER EI	F./DA1	re HC	R0404	CME-45C	91.5%	11/10/2	015			DRILL	METHO	D H.:	S. Augers HAMMI	ER TYPE Automatic
		organ,				TART DA				COI	MP. DA	TE 07			SURFACE WATER DEPTH N/	
D	DRIVE	DEPTH		w col					PER FOO			SAMP		1 L	CORPAGE WATER BETTIN	
/f+\ E	ELEV (ft)	(ft)			0.5ft	0	25		50	75	100	NO.	моі	O G	SOIL AND ROCK DESC	CRIPTION DEPTH (ft)
535	-	- - -				 	• •	• • • •		• •				-	532.3 GROUND SURFA	
530		-				: : :				<u>: :</u>					Red-brown, stiff, non-plastic w/trc. roots, sand & gra	c, clayey SILT
_5	528.1	4.2					: :			: :					w/tic. roots, sand & gra	vei (A-5).
	+	-	2	4	5	. • 9 .				. .						
525	4	_							<u> </u>	+					-	
_5	523.1	9.2	2	4	4	: :										
500	1	-	_	7	, i											
520	-	_				 	+:		<u> </u>	. .					-	
_5	518.1	14.2	1	2	2	🕍 · ·	. .			- -					-517.6 RESIDUAL	14.7
515	1	-					: :								Olive brown, med. stiff, non-	plastic, clayey
	-40.4	-				1									SILT w/trcs. roots, sand &	gravel (A-5).
-	513.1	19.2	2	3	3	i _6 :	: :									
510	+	-					- -			- -				. 		
_5	508.9	23.4	60/0.1			1					60/0.1			11.1	508.9 508.8 CRYSTALLINE R	23.4 OCK \(\sum_23.5/
															Boring Terminated with Penetration Test Refusal 508.8 ft in CR (inferre Metavolcanic) Boring located in roadway, uopen for 24 hour water ta	at Elevation ad Mafic

SHEET 11